

Chronic Acalculous Cholecystitis: Changes in Patient Demographics and Evaluation Since the Advent of Laparoscopy

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ABSTRACT

Background and Objective: To analyze patients with chronic acalculous cholecystitis over ten years, during which laparotomy was replaced by laparoscopy as the dominant operation for cholecystectomy in regard to patient demographics, diagnostic evaluations, follow-up symptoms, and additional operations.

Methods: Of 7181 cholecystectomies from June 1985 to June 1995, 301 patients had chronic acalculous cholecystitis. All subsequent hospital admissions and emergency room visits were reviewed through May 1997. Office records were available for review in 158 cases. Two eras were defined, the open era from June 1985 through May 1990, and the laparoscopic era from June 1990 through June 1995.

Results: Twice as many patients with chronic acalculous disease underwent cholecystectomy after the advent of laparoscopy. Patients with chronic acalculous disease were significantly younger than patients with cholelithiasis in both open and laparoscopic cases. The percentage of white women increased from 64.7% in the open to 75.7% in the laparoscopic era ($p < 0.05$). The numbers of preoperative diagnostic tests performed decreased from 4.7 ± 2.4 in the open to 3.2 ± 1.8 in the laparoscopic era ($p < 0.05$). Twenty-two percent of patients had continued symptoms postoperatively, and 8 patients (2.7%) required other abdominal operations within one year of cholecystectomy.

Conclusion: Chronic acalculous cholecystitis is a disease of white females, doubling in frequency over the decade of review. Of these, 78% of patients had resolution of their symptoms on long-term follow-up.

Key Words: Chronic acalculous cholecystitis, Laparoscopy, Gallbladder.

INTRODUCTION

Previous reports indicate that the number of patients undergoing cholecystectomy has increased since the introduction of laparoscopic cholecystectomy (LC).¹⁻³ Few studies have specifically looked at the incidence of chronic acalculous biliary disease, preoperative evaluation, or the patient demographics in these cases. The purpose of this study was to evaluate a relatively geographically isolated population of patients undergoing elective cholecystectomy without cholelithiasis over the period of time in which open cholecystectomy (OC) was supplanted by the laparoscopic approach with respect to changing preoperative evaluation, time of original symptom development to operation, and postoperative course and symptomatology. Some comparisons to patients with calculous biliary disease also are identified and discussed.

MATERIALS AND METHODS

This retrospective study consisted of all patients who underwent cholecystectomy for chronic acalculous cholecystitis in Saginaw, Michigan between June 1, 1985 and June 30, 1995. The latter date was selected to allow for at least 18 months of postoperative follow-up. The first LC was performed on June 14, 1990.

Patients were identified by reviewing all charts assigned ICD-9 codes for cholecystectomy (51.22, 51.23) and those who had associated 575.X codes for disease not associated with cholelithiasis (defined as 574.X). Of 719 patients with acalculous cholecystitis, 143 were excluded due to acute acalculous disease. Of the remaining 576 patients (185 from June 1985 through May 1990 and 391 from June 1990 through June 1995), 180 patients were excluded in the LC era and 95 from the OC era due to 1) calculus disease identified preoperatively and not confirmed intraoperatively or at pathologic review, and 2) acalculous disease preoperatively found to have calculi at operation or on pathologic analysis. The remaining 301 patients were reviewed for presenting symptomatology, patient characteristics, preoperative diagnostics, as well as postoperative symptomatology, evaluation, diagnoses, and operations performed after cholecystectomy. All subsequent hospital admissions and emergency room

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visits were reviewed through May 1997. Office records were available for review for 158 cases, 25 from the OC era and 133 from the LC era.

Statistical analysis was performed using the SPSS statistical program utilizing Fischer's exact test, Chi-square, and paired t-test as appropriate. All means were expressed with the standard deviation and significance was considered when $p<0.05$.

RESULTS

During the decade from June 1985 to June 1995, 7181 cholecystectomies were performed. Of this total, 6462 patients had cholelithiasis; the remainder had diagnoses of acute or chronic acalculous cholecystitis or biliary dyskinesia. During the study period, 211 of 3247 (4.2%) cholecystectomies were performed for chronic acalculous cholecystitis, an increase from 90 of 3934 (2.3%) prior to the introduction of laparoscopy ($p<0.05$).

Of the 301 patients with chronic acalculous cholecystitis, 211 (70%) underwent cholecystectomy since the advent of laparoscopy. All patients presented with abdominal pain; other symptoms included episodic vomiting, bloating, frequent eructation, fatty food intolerance, diarrhea, and dyspepsia. The mean age of patients with acalculous disease was 42.2 ± 11.6 in the OC era and 46.5 ± 14.5 in the LC era (range 14-82 years, $p<0.05$). In both eras, the mean age was significantly younger than those with stones (50.6 ± 18.1 years; range 5-97 years, $p<0.0001$). The vast majority of all patients undergoing cholecystectomy for all diagnoses were white women, 72.1% in patients with acalculous disease—a statistically significant increase from 65.1% in patients with cholelithiasis ($p<0.05$). Similarly, there was a statistically significant increase in the percentage of white women with chronic acalculous disease from 64.7% in the OC era to 75.7% in the LC era ($p<0.05$).

Patients in the LC and OC eras did not differ in preoperative body mass index, number of medications, or number of positive laboratory tests. Non-steroidal anti-inflammatory medications (NSAID) and omeprazole were used more commonly in patients during the LC era; whereas, antacids were more common in the OC era ($p<0.05$). There were no other significant differences in the other 13 medications studied between the groups of patients.

Preoperative diagnostic evaluation included ultrasound (US), upper gastrointestinal series (UGI), biliary scintigra-

phy (HIDA), cholecystokinin-stimulated HIDA (CCK-HIDA), computed tomography (CT), oral cholecystography, (OCG), barium enema (BE), endoscopic retrograde cholangiopancreatography (ERCP), esophagogastroduodenoscopy (EGD), colonoscopy, intravenous pyelogram (IVP), and plain radiographs (XRAY). The number of tests performed significantly decreased from 4.7 ± 2.4 in the first half of the decade to 3.2 ± 1.8 in the LC era ($p<0.0001$). Similarly, individual tests decreased except hepatobiliary scintigraphy, which increased due to the usage of CCK-HIDA, and US, the most common test performed, at a frequency of 94% remained unchanged through the decade (Figure 1). The average CCK-HIDA

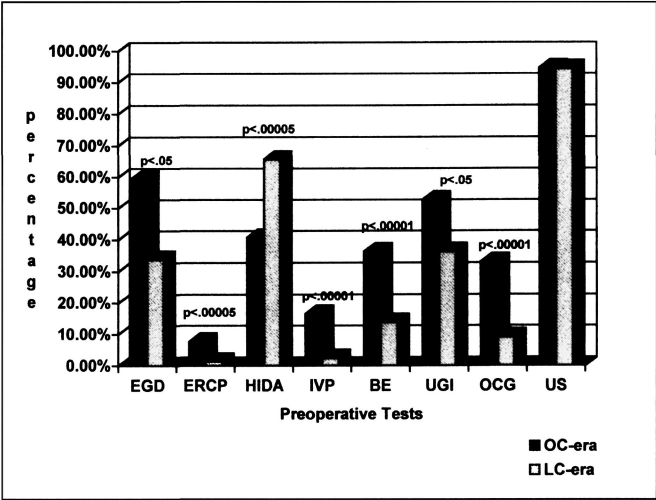


Figure 1. Preoperative tests by era.

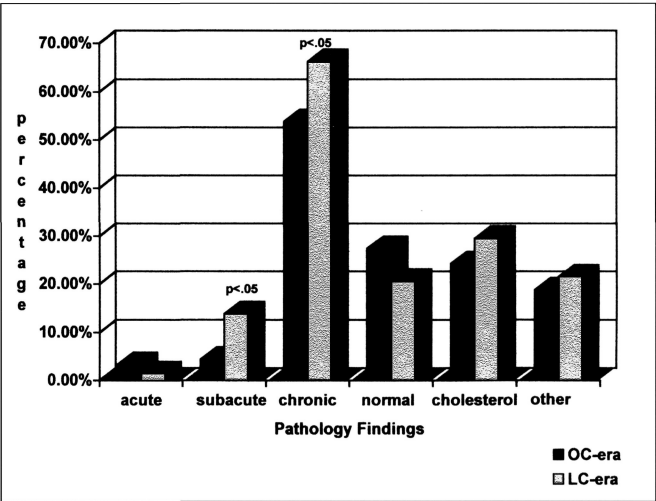


Figure 2. Pathologic diagnosis by era.

ejection fraction was 17.3% \pm 12.1% (range 0-81%, normal considered >35%). Of patients having a CCK-HIDA, 44.9% had reproduction of symptoms. Positive US findings occurred in 27.9% of patients, predominantly sludge (8.6%), thickened gallbladder wall (8.3%), and polyps (10.3%), without statistical variance throughout the study period.

On microscopic reports, chronic and subacute pathology was diagnosed more commonly in the LC era ($p < 0.05$). Normal pathology did not change statistically between the time periods and was 23% (**Figure 2**).

Sixty-four patients (22%) continued to have postoperative symptoms, and this did not significantly change during the decade of study. Twenty-two (7.3%) patients had additional diagnoses within one year. Of these, 8 patients (2.7%) underwent another abdominal operation within one year for continued symptoms. No statistically significant difference existed between OC and LC groups in the incidence of subsequent operations performed within one year of cholecystectomy. Symptomatology was attributed to a diverse array of non-biliary diagnoses: peptic ulcer disease ($n=1$), myofascial syndrome ($n=2$), gastroesophageal reflux ($n=3$), cardiac disease with atypical angina ($n=1$), chronic pancreatitis including pancreas divisum ($n=1$), pancreatic cancer ($n=1$), and Meckle's diverticulum ($n=1$).

DISCUSSION

In this series of patients from a relatively isolated geographic community, the prevalence of cholecystectomy for chronic acalculous cholecystitis almost doubled during the decade studied—an increase sustained and statistically significant since the introduction of laparoscopy. Patients who underwent LC for chronic acalculous disease had on average three preoperative tests prior to cholecystectomy as compared to nearly five per patient in the OC era. In the vast majority of the laparoscopy cases, these tests included an ultrasound for gallbladder structure and the CCK-HIDA for gallbladder function. Only one additional test was performed not specific for biliary pathology prior to operation. The CCK-HIDA scan has been available in Saginaw since May 1991, while hepatobiliary scintigraphy has been a diagnostic option since the mid 1970s. The decreasing numbers of tests performed since the introduction of laparoscopy may, therefore, be due to the increased use of the CCK-HIDA scan. The CCK-HIDA was the first specific test for

chronic acalculous disease, and its increase coupled with decreased utilization of other preoperative evaluations may indicate increasing physician awareness of the disease and the appropriateness of the CCK-HIDA as a predictor of postoperative success after cholecystectomy. In a number of studies, 75-90% of patients with a clinical diagnosis of chronic acalculous cholecystitis have been reported to be rendered pain free by cholecystectomy.^{4,9} Some series report a 70-75% cure rate in patients based on symptomatology only; whereas, other reviews reported 80-90% resolution using CCK-HIDA as preoperative predictor of success.⁶⁻¹³ In this study, 22% of patients had symptoms postoperatively, including 2.7% having an additional operation within one year of cholecystectomy regardless of the era.

Patient demographics indicate that this is an operation of white females, more so since the advent of laparoscopy. Although many believe there is a preponderance of females with biliary disease, an etiologic factor has not been identified that explains this overwhelming majority of patients with acalculous disease. The concurrent racial demographics during this study are not precisely known; however, there was a statistically significant increase in the number of white females with chronic acalculous cholecystitis compared with patients with cholelithiasis. This may reflect an unknown bias in this review and may deal with access to health care, insurance status, or referral patterns from more outlying rural areas more likely to consist of Caucasians.

In both eras combined, 23% of patients had normal findings on pathologic review. Other investigators demonstrated no relation between decreased gallbladder ejection fraction and the findings of chronic cholecystitis on pathology.⁴ Symptoms occurring with the CCK-stimulated hepatobiliary imaging studies also are not specific for cholecystitis. Patients with irritable bowel syndrome may also have reproduction of pain with CCK stimulation.¹⁴ Others have suggested that chronic acalculous biliary disease may be associated with irritable bowel syndrome as a global dysmotility syndrome.¹⁵ In one series, injection of CCK increased colonic motor activity in all 20 patients tested with irritable bowel syndrome. This was especially severe in 40% of patients who complained of abdominal pain after food. Half of these patients developed reproduction of symptoms with the CCK.¹⁴ Cautious interpretation of patient reproduction of symptoms with CCK administration appears to be warranted.

CONCLUSIONS

The change from open to laparoscopic cholecystectomy was accompanied by more white females undergoing operation for acalculous biliary disease. The number of preoperative diagnostic evaluations has decreased since the advent of laparoscopy. Over 90% of these patients now have an ultrasound, a CCK-stimulated HIDA, and one additional evaluation prior to cholecystectomy. The true incidence of persistent symptoms may be underestimated in this study because of incomplete long-term follow-up in only half of the patients in this series.

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